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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057m/CEMENT/2016-17 Date: 06.06.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
*NAME OF THE WORK	:	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
*REFERENCE	:	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
SAMPLE ID	:	Cement – Sample 1
SAMPLE RECEIVED ON	:	04.06.2016
PERIOD OF TESTING	:	04.06.2016 to 06.06.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	140 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	480 Minutes	Not More than 600 Minutes
	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

* Information is furnished by the Customer/Representative.

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P Bangalore

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Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057m/SAND-Gradation/2016-17 : 06.06.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Nithin,**
No.58, Muneshwara Layout, 5th cross, Bangalore - 91.

*** Name of Work** : Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates – Sample 1

Sample Received on : 04.06.2016

Date of Testing : 06.06.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	96.50	90-100	90-100	90-100	95-100
2.36	78.00	60-95	75-100	85-100	95-100
1.18	56.00	30-70	55-90	75-100	90-100
600 Micron	28.00	15-34	35-59	60-79	80-100
300 Micron	15.50	5-20	8-30	12-40	15-50
150 Micron	6.60	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P Bangalore

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Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057m/AGG/GR/2016-17 : 06.06.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Nithin,**
No.58, Muneshwara Layout, 5th cross, Bangalore - 91.

*** Name of Work** : Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (40mm) - Sample 1

Sample Received on : 04.06.2016

Date of Testing : 06.06.2016

Total Wt. of Aggregates in gms= **7000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.86	95-100	85-100
20	33.57	30-70	0-20
10	16.43	10-35	0-5
4.75	3.57	0-5	-

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P Bangalore.

Civil-Tech Consultants & Engineers Bangalore

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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T-2377

Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057m/AGG/GR/2016-17 : 06.06.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Nithin,**
No.58, Muneshwara Layout, 5th cross, Bangalore - 91.

*** Name of Work** : Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

*** Reference** : BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (20mm) – Sample 1

Sample Received on : 04.06.2016

Date of Testing : 06.06.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2007)	
		Graded	Single Sized
40	100	100	100
20	97.60	95-100	85-100
10	31.60	25-55	0-20
4.75	5.80	0-10	0-5

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P Bangalore

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/RN /STEEL/2016-17 20.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
Name of the Work	:	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
Date of Test	:	20.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	515	558	13.35	O.K	O.K

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P. Bangalore

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/RN /STEEL/2016-17 20.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
Name of the Work	:	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
Date of Test	:	20.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	16	1.58	520	563	13.50	O.K	O.K

AE-06 n/a

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Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057m/CUBE/2016-17 22.07.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Nithin,**
No.58, Muneshwara Layout, 5th cross, Bangalore - 91.

*** Name of the work** : Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

*** Reference** : BBMP/EE/BTP/WO/14/2015-16 Dated: 30.04.2016

*** Sample ID** : Culvert Deck Slab Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*** Grade of Concrete** : M_{20}

Compressive Strength as on : 28th day

Sample Received on : 22.07.2016

AE-06
n/a

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	24.06.2016	22.07.2016	8.135	478.3	21.26
2	24.06.2016	22.07.2016	8.265	492.3	21.88
3	24.06.2016	22.07.2016	8.352	510.2	22.68

Assistant Executive Engineer
Byatarayanapura Sub Division
B.B.M.P Bangalore

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Job No.: CTCE/BBMP/W.No.06/RN/WMM/Gradation/2016-17 11.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. R. Nithin,**
No.58, Muneshwara Layout, 5th cross, Bangalore - 91.

Name of Work : Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016

Date of Testing : 11.07.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **8105**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	210	210	2.6	97.4	95-100
22.4	2505	2715	33.5	66.5	60-80
11.2	1290	4005	49.4	50.6	40-60
4.75	1185	5190	64.0	36.0	25-40
2.36	985	6175	76.2	23.8	15-30
0.600	900	7075	87.3	12.7	8-22
0.075	800	7875	97.2	2.8	0-8

AE-06

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Job No.: CTCE/BBMP/W.No.06/RN/WMM/AIV/2016-17 11.07.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
Name of the Work	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	11.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.62	22.82	
	100* (W_2/W_1)%			22.72

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.06/RN/WMM/S-T/2016-17 11.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
Name of Work	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	11.07.2016

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.23%**

Elongation Index = **13.05%**

Result : Combined Flakiness & Elongation index 24.28%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P. Bangalore

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Job No.: CTCE/BBMP/W.No.06/RN/CSR-06/057M/QB/2016-17 18.07.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
*NAME OF THE WORK	:	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	16.07.2016
DATE OF TESTING	:	18.07.2016

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	86	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	44	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	302	Min. 220

*Information is furnished by the Customer/Representative.

AE-06 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P. Bangalore

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Job No.: CTCE/BBMP/W.No.06/RN/SDBC/Bit/2016-17 20.07.2016

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
NAME OF THE WORK	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
SAMPLE I/D	Roads near Buddisht School Ward No.06.
DATE OF TESTING	20.07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

Note:

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Þ The results indicated above are based on the tests carried out on the samples received in the laboratory

Þ Any Query regarding the report must be reported within 30 days from the date of testing.

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ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

M/s. Civil-Tech Consultants & Engineers
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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/RN/SDBC/Bit/2016-17 20.07.2016

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. R. Nithin,** No.58, Muneshwara Layout, 5th cross, Bangalore - 91.
NAME OF THE WORK	Improvements to Roads and Drains near Buddisht School (Dasarahalli Extension) in Ward No.06 Byatarayanapura Sub Division, BBMP,
REFERENCE	BBMP/EE/BTP/WO/14/2016-17 Dated: 30.04.2016
SAMPLE I/D	Roads near Buddisht School Ward No.06.
DATE OF TESTING	20.07.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	25.26	5.32	5.32	94.68	90-100
4.75	260.5	54.84	60.16	39.84	35-51
2.36	55.26	11.63	71.79	28.21	24-39
1.18	40.22	8.47	80.26	19.74	15-30
0.3	32.25	6.79	87.05	12.95	9-19
0.075	32.26	6.79	93.84	6.16	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	29.36	6.19	6.19	93.81	90-100
4.75	268.5	56.65	62.84	37.16	35-51
2.36	36.26	7.65	70.49	29.51	24-39
1.18	32.26	6.81	77.30	22.70	15-30
0.3	41.22	8.70	85.99	14.01	9-19
0.075	42.25	8.91	94.91	5.09	3-8

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